

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES 1 2
AMENDMENT/MODIFICATION NO. 139		3. EFFECTIVE DATE See Blk 16	4. REQUISITION/PURCHASE REQ. NO. 4200167000		5. PROJECT NO. (If applicable) GOES N-P
6. ISSUED BY NASA/Goddard Space Flight Center Greenbelt, Maryland 20771		CODE 210.Y	7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771		CODE
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				(4)	9A. AMENDMENT OF SOLICITATION NO. 1
					9B. DATED (SEE ITEM 11)
				X	10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069
					10B. DATED (SEE ITEM 13) Jan 28, 1998
CODE		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See page 2

Amt:\$0

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS;
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: 52.232-18 - "Availability of Funds"
	D. OTHER Specify type of modification and authority

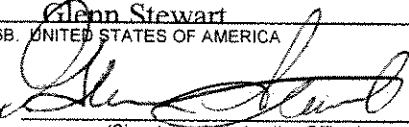
E. IMPORTANT: Contractor X is not, is required to sign this document and return ___ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of the modification is to provide an additional \$5,000,000 in funding.

Accordingly,

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR		16B. UNITED STATES OF AMERICA	
15C. DATE SIGNED		16C. DATE SIGNED	
(Signature of person authorized to sign)		Glenn Stewart By  (Signature of Contracting Officer)	
		7/20/06	

Contract No. NAS 5-98069

Modification 139

Page 2 of 2

1. Revise Clause H.6, Limitation of funds as Follows:

From: \$706,535,868 (Mod 125)

By: 5,000,000

To: \$711,535,868 (Mod 139)

2. Replace page H-7 with the attached page H-7.

End of Modification

**SECTION H FOR NAS5-98069
SPECIAL CONTRACT REQUIREMENTS
MODIFICATION NO. 139**

e. Subcontractor Reporting

FAR clause 52.219-9 and NASA FAR Supplement clause 18-52.219-75 require that the Contractor ensure that SF 294 and SF 295 reports are submitted by those subcontractors that have been required to adopt a Subcontracting Plan under the terms of the clause. These subcontractor reports must be submitted as required by paragraphs (c) and (d) above. The reports may be submitted through the Contractor or submitted directly. Regardless, the Contractor is responsible for ensuring proper and timely submittal of the required reports.

(End of clause)

**H.6 LIMITATION OF FUNDS (FIXED-PRICE CONTRACT) (18-52.232-77)
(MAR 1989)**

(a) The sum of \$711,535,868.00 (Mod 139) is presently available for payment and allotted to this contract. It is anticipated that from time to time additional funds will be allocated to the contract in accordance with the following schedule, until the total price of said item is allotted:

SCHEDULE FOR ALLOTMENT OF FUNDS

<u>Date</u>	<u>Amounts</u>
September 21, 2004	\$38,000,000.00

(b) The Contractor agrees to perform or have performed work on the items specified in paragraph (a) above up to the point at which, if this contract is terminated pursuant to the Termination for Convenience of the Government clause of this contract, the total amount payable by the Government (including amounts payable for subcontracts and settlement costs) pursuant to paragraphs (f) and (g) of that clause would, in the exercise of reasonable judgment by the Contractor, approximate the total amount at the time allotted to the contract. The Contractor is not obligated to continue performance of the work beyond that point. The Government is not obligated in any event to pay or reimburse the Contractor more than the amount from time to time allotted to the contract, anything to the contrary in the Termination for Convenience of the Government clause notwithstanding.

(c)(1) It is contemplated that funds presently allotted to this contract will cover the work to be performed until October 30, 2009.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NO. 140		3. EFFECTIVE DATE See Blk 16		4. REQUISITION/PURCHASE REQ. NO. 4200137884		5. PROJECT NO. (If applicable) GOES N	
6. ISSUED BY NASA/Goddard Space Flight Center Greenbelt, Maryland 20771		CODE 210.Y		7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				(4)		9A. AMENDMENT OF SOLICITATION NO.	
						9B. DATED (SEE ITEM 11)	
				X		10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069	
CODE				FACILITY CODE		10B. DATED (SEE ITEM 13) Jan 28, 1998	
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

Amt: \$0

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Changes Clause 52.243-1 Alt. II
	D. OTHER Specify type of modification and authority

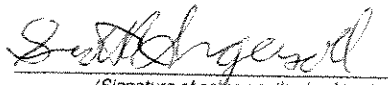
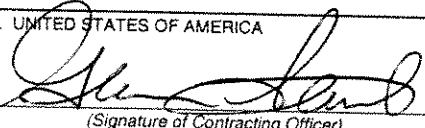
E. IMPORTANT: Contractor is not, XXX is required to sign this document and return 4 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This un-priced supplemental agreement authorizes start-up efforts in support of revised Statement of Work and Performance Specification changes to SSGS software and hardware including the purchase of five spare satellite modems.

Accordingly,

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Mr. Scott Ingersoll Manager, NASA Contracts, BSS		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Glenn Stewart	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED July 21, 2006	16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)	16C. DATE SIGNED 7/21/06

Contract No. NAS 5-98069
Modification 140
Page 2 of 2

- A. The spacecraft contractor shall proceed with the implementation of the Build 11 design through the completion of the final Build 11 Design Review and delivery of the design review packages as detailed in the contractor's proposal SSGS Engineering Change Proposal 3.
- B. The spacecraft contractor shall proceed with the purchase of five MDL satellite modems.

CONTRACTOR'S STATEMENT OF RELEASE

Any claim for increased price or allotment of funds resulting from this change must be asserted in accordance with the terms of the Changes clause of this contract and this modification. Until modification is made, as a result of such assertion, the Contractor is not obligated to continue performance or incur costs beyond the point established in the contract clause entitled "Limitation of Funds." A not-to-exceed price of \$769,105 is set for this effort. The contractor hereby releases the Government from any and all liability for fee arising from estimated costs for this effort that exceed \$769,105. Costs of this changed effort shall be separately accounted for the duration of this effort.

End of Modification

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE 1 OF 2 PAGES
2. AMENDMENT/MODIFICATION NO. 141	3. EFFECTIVE DATE See Blk 16	4. REQUISITION/PURCHASE REQ. NO. 4200171340	5. PROJECT NO. (If applicable) GOES N		
6. ISSUED BY NASA/Goddard Space Flight Center Greenbelt, Maryland 20771		7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771			
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP: Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				(4)	9A. AMENDMENT OF SOLICITATION NO.
					9B. DATED (SEE ITEM 11)
				X	10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069
					10B. DATED (SEE ITEM 13) Jan 28, 1998
CODE		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

Amt: \$0

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Changes Clause 52.243-1 Alt. II
	D. OTHER Specify type of modification and authority)

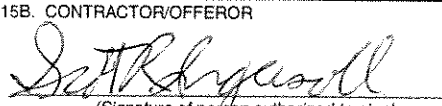
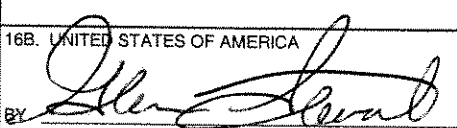
E. IMPORTANT: Contractor is not, XXX is required to sign this document and return 4 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to increase the spacecraft storage costs for GOES O storage.

Accordingly,

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Mr. Scott Ingersoll Manager NASA Contracts BSS		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Glenn Stewart	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED August 14, 2006	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 8/18/06

Contract No. NAS 5-98069
Modification 141
Page 2 of 2

- A. Under Clause B.1 Deliverable Requirements revise CLIN 14 Spacecraft Storage to increase the value by \$2,547,000.
- B. Under Clause B.2 Firm Fixed Price increase the firm fixed price from \$736,521,566 by \$2,547,000 to \$739,068,566.
- C. Replace Clause B.1 and B.2 with the attached Clause B.1 and B.2.

End of Modification

SECTION B FOR NAS 5-98069
SUPPLIES AND SERVICES
MODIFICATION 141

11a.	One set of GOES P Components as listed in Attachment M (formerly N/O Spares)	\$49,500,000
11b	Additional Ground Support Special Test Equipment (Mod 73)	NSP
12.	Special Task Assignments with Reports	\$ 7,801,061 See Clause B.9
13.	Additional Integration & Testing Support	\$534,000 See Clause H.4
14.	Spacecraft Storage	\$6,509,000 See Clause H.4
<u>OPTION 1</u>		
15.	On-Orbit Acceptance of GOES P Spacecraft	\$137,139,218
16	RESERVED	
17	Additional Integration & Testing Support	See Clause H.4
18	Spacecraft Storage	See Clause H.4

Total value of each CLIN, for purposes of final payment shall be reduced by Performance Based Payments made to the contractor for that CLIN.

(End of clause)

B.2 FIRM FIXED PRICE (18-52.216-78) (DEC 1988)

The total firm fixed price for this contract is \$739,068,566.

(End of clause)

B.3 RESERVED

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE 1	OF 2	PAGES
2. AMENDMENT/MODIFICATION NO. 142	3. EFFECTIVE DATE See Blk 16	4. REQUISITION/PURCHASE REQ. NO. N/A	5. PROJECT NO. (If applicable) GOES O				
6. ISSUED BY NASA/Goddard Space Flight Center Bldg 6, Room W246 Greenbelt, Maryland 20771		CODE 210.Y	7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771		CODE		
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				(4)	9A. AMENDMENT OF SOLICITATION NO.		
					9B. DATED (SEE ITEM 11)		
				X	10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069		
					10B. DATED (SEE ITEM 13) Jan 28, 1998		
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required) N/A Amt: \$0.00							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER Specify type of modification and authority: Clause H.4--Additional Government Accommodations						
E. IMPORTANT: Contractor XXX is not, is required to sign this document and return ___ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							

The purpose of this modification is to revise the Engineering Handover Date identified in clause F. 2 for the GOES O Spacecraft.

Accordingly:

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY <u>Glenn Stewart</u> (Signature of Contracting Officer)	8/30/06

Contract No. NAS 5-98069
Modification 142
Page 2 of 2

1. In accordance with Clause H.4—Additional Government Accommodations, paragraph (g) of contract NAS 5-98069, the Contractor (BSS) is hereby notified of a revision to the Engineering Handover Date (EHD) for the GOES O Spacecraft. This notification serves to fulfill the Government's contractual obligation to amend the contract via modification and to notify the contractor (BSS) of a revised EHD 15 months in advance of the current Engineering Handover Date.

As stated in Clause F.2 of contract NAS 5-98069, the Engineering Handover for GOES O is hereby changed from November 30, 2007 to December 30, 2007.

2. Replace page F-3 with the enclosed revised F-3 change page.

The fixed Price of this contract and the funds allotted for the performance thereof shall not be deemed to be increased by the modification. This modification also represents a complete and equitable settlement for the work associated with this change and releases the Government from any and all liability under this contract for further equitable adjustment attributed to such facts and circumstances giving rise by this modification, except as provided for in Clause H.4(g).

End of Modification

SECTION F FOR NAS 5-98069
DELIVERIES OR PERFORMANCE
MODIFICATION 142

F.2 ENGINEERING HANDOVER DATES AND STORAGE DATES

The following dates are defined as the engineering handover dates and the earliest dates at which the spacecraft may be placed into ground storage:

	<u>Earliest Ground Storage Date</u>	<u>Engineering Handover Date</u>
GOES N	January 1, 2002	December 31, 2004
GOES O	January 1, 2003	December 30, 2007
GOES P	January 1, 2005	April 30, 2008

The contractor shall place each GOES spacecraft or replacement spacecraft into storage, if required, at the contractor's facility immediately following successful completion of spacecraft Integration and Test (I&T) (including integration and test of the delivered GFE instruments) and successful completion of the pre-storage review, but no earlier than the dates specified for Earliest Storage Date (ESD). No storage charges, as defined in Clause H.4, shall be paid prior to the ESD or for any storage resulting from delays in the Contractor-provided launch.

(End of clause)

F.3 SECTION F CLAUSES INCORPORATED BY REFERENCE

(52.242-15) STOP-WORK ORDER (AUG 1989)
(52.247-34) F.O.B. DESTINATION (NOV 1991)

(End of By Reference Section)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE 1 OF 2 PAGES	
2. AMENDMENT/MODIFICATION NO. 143		3. EFFECTIVE DATE See Blk 16		4. REQUISITION/PURCHASE REQ. NO. 4200137884		5. PROJECT NO. (If applicable) GOES N	
6. ISSUED BY NASA/Goddard Space Flight Center Greenbelt, Maryland 20771		CODE 210.Y		7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				(4) 9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				X 10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069			
				10B. DATED (SEE ITEM 13) Jan 28, 1998			
CODE		FACILITY CODE					

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

- ☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
- (a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

Amt: \$0

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Changes Clause 52.243-1 Alt. II
	D. OTHER Specify type of modification and authority

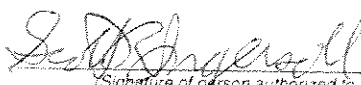

E. IMPORTANT: Contractor is not, XXX is required to sign this document and return 4 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This supplemental agreement revises the effort authorized under Modification 140.

Accordingly,

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Mr. Scott Ingersoll Manager, NASA Contracts, BSS		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Glenn Stewart	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED September 15, 2006	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 9/15/06

Contract No. NAS 5-98069
Modification 143
Page 2 of 2

Paragraph A. of Modification 140 is changed to add "... and start the initial software development ..." as follows:

- A. The spacecraft contractor shall proceed with the implementation of the Build 11 design through the completion of the final Build 11 Design Review, delivery of the design review packages and start the initial software development detailed in the contractor's proposal SSGS Engineering Change Proposal 3.

CONTRACTOR'S STATEMENT OF RELEASE

This revision to the effort identified in Modification 140 does not change the conditions of the not-to-exceed price of \$769,105 established in Modification 140.

End of Modification

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE 1 OF 12 PAGES
2. AMENDMENT/MODIFICATION NO. 144	3. EFFECTIVE DATE See block 16C	4. REQUISITION/PURCHASE REQ. NO. 4200137884	5. PROJECT NO. (If applicable) GOES N	
6. ISSUED BY NASA/Goddard Space Flight Center Greenbelt, Maryland 20771	CODE 210.Y	7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771	CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager			(4)	9A. AMENDMENT OF SOLICITATION NO.
				9B. DATED (SEE ITEM 11)
			X	10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069
				10B. DATED (SEE ITEM 13) Jan 28, 1998
CODE		FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

Amt: \$0

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Changes Clause 52.243-1 Alt. II
	D. OTHER Specify type of modification and authority)

E. IMPORTANT: Contractor is not, XXX is required to sign this document and return 4 copies to the issuing office.

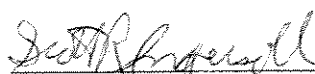

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This supplemental agreement increased the fixed price of the contract from \$739,068,566 by \$5,403,935 to \$744,472,501 and directs changes to the Spacecraft Support Ground System.

Accordingly,

CCR 4412D

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Mr. Scott Ingersoll Manager NASA Contracts BSS		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Glenn Stewart	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED October 10, 2006	16B. UNITED STATES OF AMERICA  BY: (Signature of Contracting Officer)	16C. DATE SIGNED 10/16/06

Contract No. NAS 5-98069

Modification 144

Page 2 of 12

- A. Under Clause B.1 Deliverable Requirements, revise CLIN 1 On-Orbit Acceptance of GOES N Spacecraft to increase the value from \$364,654,971 by \$5,403,935 to \$370,058,906.
- B. Under Clause B.2 Firm Fixed Price increase the firm fixed price from \$739,068,566 by \$5,403,935 to \$744,472,501.
- C. Replace Clause B.1 and B.2 with the attached Clause B.1 and B.2.
- D. Under Clause B.5 Events for Performance Based Payments, revise N19 Acceptance Review from:

“N19	Acceptance Review	\$4,108,141	Launch + 9 months
------	-------------------	-------------	-------------------

To:

N19A	Award of ISI subcontract change for ECP3	\$1,350,983	11/1/06
N19B	SSGS Build 11: Installation and Regression Tests on the NOAA DEV LAN complete	\$1,350,983	12/1/06
N19C	SSGS Build 12: Installation and Regression Tests on the NOAA DEV LAN complete	\$1,350,983	Launch + 14 months
N19D	Acceptance Review	\$5,459,125	Launch + 17 months

- E. Replace Clause B.5 with the attached Clause B.5.
- F. Under Attachment H Government Furnished Property add the following equipment to be incorporated into the SSGS:

- One (1) Boeing Spacecraft Emulator (BSE)
- Two (2) GOES Telemetry and Command System (GTACS) servers
- Two (2) Multiuse Data Link (MDL) Receive System and Server (MRS&S) servers
- One (1) GOES Telemetry and Command System (GTACS) Database server
- One (1) CORTEX

- G. Under Attachment A, the Statement of Work, revise as follows:

Add WBS 3.5.3.2, Item 5, as follows:

- 5. Update all CDRL documents to incorporate final SSGS changes at SSGS acceptance.
These documents include:

- a. MRS&S Design Document
- b. MRS&S Software Maintenance Manual
- c. MRS&S Hardware Maintenance Manual
- d. MRS&S User Manual
- e. DID User's Manual
- f. DID Design Document
- g. NTACTS Operations and Maintenance Document
- h. OATS Design Document
- i. OATS User's Manual
- j. OATS Hardware Maintenance Manual
- k. OATS Software Maintenance Manual
- l. Scheduler Design Document
- m. Schedule Manager User's Manual
- n. Schedule Manager Software Maintenance Manual
- o. GTACS Design Document
- p. GTACS User's Manual
- q. GTACS Software Maintenance Manual
- r. GTACS Hardware Maintenance Manual
- s. SSGS Hardware Installation Manual
- t. System ICD
- u. System Requirements Specification
- v. Training Manuals – as required

Add WBS 3.5.3.3, Item 6, as follows:

- 6. The spacecraft contractor shall provide hands-on software maintenance training. Training shall be presented at SOCC or Integral Systems, Inc. (Lanham, MD) and shall be scheduled during a one (1) week period during the day shift prior to final acceptance. The scope of items to be covered in this training includes the following:
 - a. Razor software build management training to be provided with delivery of Razor software to the SOCC, including the installation of Razor software on a target machine, strategies on regression testing, parallel operations testing and installation of new builds which include new EPOCH releases.
 - b. GTACS software and hardware maintenance training, including the rebuild of a GTACS server starting with installation of the operating system.
 - c. Schedule Manager ECP software maintenance training, including software installation.
 - d. OATS software and hardware maintenance training, including the rebuild of an OATS starting with the operating system and required COTS software.

- e. MRS&S software and hardware maintenance training, including the rebuild of an MRS&S server starting with the operating system.
- f. DID software maintenance training, including installation of DID software on a new workstation.

Add WBS 3.5.4.1, Items 7 – 12, as follows:

- 7. The spacecraft contractor shall replace the existing terminal servers with Government-provided terminal servers. The Government shall support system level testing of the terminal servers. All on-site testing is limited to aliveness testing and limited compatibility testing with the various SSGS software and hardware components.
- 8. The spacecraft contractor shall modify Suitland rack 37D1 to add two additional MRS&S back panel connections, two Spectron patch panel modules, and associated cabling to support MDL outputs from two additional Boeing Spacecraft Emulators (four total).
- 9. The spacecraft contractor shall install a government-provided Sun Fire V240 (or equivalent) database workstation machine at the WCDAS as an element of the development configuration (see S-415-23, paragraph 3.5.4.2, item 22).
- 10. The spacecraft contractor shall install government-provided external 4-mm tape drives in the SSGS racks at all sites (SOCC, WCDAS, WBU, SEC and FCDAS), one tape drive for each GTACS server (12), MRS&S (16), GAIM (3), and Database Workstation (3), a total of 34 tape drives and rack mount tape drive chassis. The spacecraft contractor shall install government-provided SCSI interface cards in each of the 12 GTACS V480 servers, and 23 V240 servers. The government shall provide the SCSI interface cables to connect each server to a tape drive. All on-site testing is limited to tape drive aliveness testing and verification that each drive is accessible to its host server.
- 11. The spacecraft contractor shall modify SEC rack 47B1 to add one additional MRS&S back panel connection (two total), one additional Spectron patch panel module, and associated cabling to support MDL baseband inputs from a Digital Wideband Tape Recorder and an SXI Emulator.
- 12. The spacecraft contractor shall provide BSE spare parts and spare MDL modems per the following list:
 - a. Two (2) SBS GreenSpring MIL-STD-1553 boards and associated PAM boards
 - b. Two (2) connector cable sets (W2) for the SBS GreenSpring MIL-STD-1553 boards.
 - c. Three (3) 10 MHz EACE precise clock oscillators, cables and installation instructions.

- d. Two (2) ETC-to-1553 data bus cable sets (W1). (These cables are not required to be plenum rated)
- e. Two (2) North Hills DB80031 1553 data bus couplers.
- f. One (1) MAX+plus2 VHDL circuit design source code files for the following Altera FPGAs:
 - i. ETC Altera 1
 - ii. ETC Altera 2
 - iii. EACE Altera 1
 - iv. EACE Altera 2
 - v. EACE Altera 4
- g. Source code for the following executable files:
 - i. ectcu_setup
 - ii. escp_setup
 - iii. load_alt
- h. Five (5) Comtech EF Data SDM300A modems

Revise WB S 3.5.4.2, Item 3, as follows:

From:

- 3. Delivered commercial software products shall be at the most recent, compatible revision level (nominally three to six months) as of the date of the ground system final acceptance test, mutually agreed upon by the spacecraft contractor and the government. Where the most current software version is not used in the final acceptance test, the latest version shall be required for final acceptance unless an earlier version is acceptable to the government. The final operating system for the delivered GTACS Sun Fire V480 servers, MRS&S and GAIM Sun Fire V240 servers, and DID workstations shall be Solaris 2.9. The final operating system for all OATS and Epoch Client workstations shall be Windows 2000 Professional.
(CCR4361A, Mod97; CCR4381A, Mod95)

To:

- 3. Delivered commercial software products shall be at the most recent, compatible revision level (nominally three to six months) as of the date of the ground system final acceptance test, mutually agreed upon by the spacecraft contractor and the government. Where the most current software version is not used in the final acceptance test, the latest version shall be required for final acceptance unless an

earlier version is acceptable to the government. The final operating system for the delivered GTACS Sun Fire V480 servers, MRS&S and GAIM Sun Fire V240

servers, and DID workstations shall be Solaris 2.10. The final operating system for all OATS and Epoch Client workstations shall be Windows XP Professional. The Government will provide Solaris 2.10 licenses for each server. The Government will make the Dev Rail available one week prior to the scheduled Installation and Regression Tests on the NOAA DEV LAN. The Government will make the OPS Rail available one week prior to the scheduled Installation on the NOAA OPS LAN. The Government will install and test Windows XP on all workstations on the Dev rail one week prior to the contractor's scheduled Installation and Regression Tests on the NOAA DEV LAN. The Government will install and test Windows XP on the Ops Rail one week prior to the contractor's scheduled Installation on the NOAA OPS LAN. The Government will install and test Windows XP on all remote site workstations. The Government will make the Dev VLAN with Solaris 2.10 available for GSS re-build, testing and training. (CCR4361A, Mod97; CCR4381A, Mod95; CCR4412C, Mod 144)

Add WBS 3.5.4.2, Items 18 – 22, as follows:

18. The spacecraft contractor shall upgrade the OATS software and associated COTS software to operate on Government-provided Intel processor-based workstations using the XP Professional operating system, as follows:
 - a. Upgrade compilers and other commercial off-the-shelf (COTS) software to versions compatible with the Microsoft XP Professional operating system where these are available and trustworthy.
 - b. Modify the OATS backup functionality such that no external media (e.g., JAZ drives) are required.
 - c. Testing of the government supplied workstation execution speed and disk space is not required.
19. The final database software installation at Wallops CDAS will be performed by the Government.
20. The spacecraft contractor shall provide functionality through which the government can generate an Epoch database using a spacecraft contractor-provided SSED output and spreadsheet files containing limits, globals, coefficients, event messages, pseudo-telemetry points and Unexpected State Changes (USC) required for on-orbit operations as identified in the GOES-N PLT database.
21. The spacecraft contractor shall provide two Razor software build management system licenses and shall install the Razor systems on the two government-provided GTACS database workstation machines.

22. The spacecraft contractor shall deliver and install a replica of the SSGS development Razor database on the database workstations with delivery of the Razor systems at SSGS final acceptance (FAT) and completion of the Engineering Change Proposal 3

work if this work completes after FAT. The software modification for ECP 3 shall be controlled in the RAZOR system at the spacecraft contractor's site. This data may not be present on the customer's replica until it is copied after the final software release.

Change WBS 3.5.5, item 2d as follows:

FROM:

- d. Final Acceptance Test - formal test after completion of all planned modifications/corrections to demonstrate ground system compliance with all requirements leading to system acceptance by the government. Test duration is approximately 10 days.

TO:

- d. Final Acceptance Test - formal test after completion of all modifications/corrections to demonstrate ground system compliance with all requirements leading to system acceptance by the government. Test duration is approximately 10 days and shall be completed three (3) months prior to the planned ground system acceptance.
(CCR4412C, Mod 144)

Change WBS 3.5.5, item 3 as follows:

FROM:

- 3. The government shall identify discrepancies during each test phase via GOES incident reports (GIRs) managed through the NOAA Anomaly Tracking System (ATS). The government shall identify from each test those GIRs to be resolved by the spacecraft contractor before proceeding to a subsequent test phase. The spacecraft contractor shall resolve all discrepancies from all test phases, and shall deliver and integrate appropriate hardware and software changes prior to beginning the final acceptance test.

TO:

The government shall identify discrepancies during each test phase via GOES Incident Reports (GIRs) managed through the NOAA Anomaly Tracking System (ATS). The government shall identify from each test those GIRs to be resolved by the spacecraft contractor before proceeding to a subsequent test phase. The spacecraft contractor shall resolve all discrepancies from all test phases, and shall deliver and integrate appropriate hardware and software changes prior to beginning the final acceptance test. In the event that any discrepancies are identified during or subsequent to the FAT, these shall be assigned for accountability according to the severity, where the spacecraft contract shall assume accountability for any discrepancies assigned a severity of 1 or 2, and the government shall assume accountability for any discrepancies assigned a severity of 3, 4, or 5 (CCR4412C, Mod 144).

H. Under Attachment B, the Performance Specification, revise as follows:

Change the Performance Specification under Paragraph 7.2.1, Item 15 as follows:

From:

15. Use the GOES I-M Archive System for the on-line storage of the GOES N-Q DSN and CDA (2209 MHz and 1694 MHz) PCM telemetry streams, NTACTS AGC data, Imager and Sounder wideband telemetry received from the SPS, and SXI data received from the MRS&S. The interface between GTACS and the GOES I-M archive system shall be implemented in accordance with the ISI GOES Archive – GAIM Interface Control Document, ISI-NQ-GTACS-0006. **(MOD36, CCR4183C; MOD43, CCR4215; Mod105, CCR4331G)**

To:

15. Use the GOES I-M Archive System for the on-line storage of the GOES N-Q DSN and CDA (2209 MHz and 1694 MHz) PCM telemetry streams, all ground globals

or those flagged in the database, NTACTS AGC data, Imager and Sounder wideband telemetry received from the SPS, and SXI data received from the MRS&S. The interface between GTACS and the GOES I-M archive system shall be implemented in accordance with the ISI GOES Archive – GAIM Interface Control Document, ISI-NQ-GTACS-0006. A corresponding change to GAS software and GAS/GAIM ICD is required to process a new “global values” buffer and write a new “global values” file type to the Near Term Data Cache (NTDC) directory. Modification, by the Government, of the GAS is required to accept this new data, which shall be completed prior to start of system level test for the scheduled Build 11 or Build 12 deliveries. The global variables shall be retrieved from the primary stream only. (MOD36, CCR4183C; MOD43, CCR4215; Mod105 CCR4331G; CCR4412C, Mod 144)

Under the Performance Specification Add, Paragraph 7.2.1, Item 20, sub-items l – r, as follows:

- l. Verifies (ensures) that the time between consecutive time tag commands or command sequences is greater than or equal to (vice greater than) the default constraint value during CP and schedule validations.
- m. Saves changes to the dialog box values as detailed below, such that when the scheduling software is stopped and restarted by the same or another user, the previous user's choices are the defaults:
 - i. The Output Directories and Filenames dialog box: no changes are to be made to this dialog box.
 - ii. The Select CLS Parameters dialog box: make GRD & OB validation the default and save the year entry (i.e., make it sticky).
 - iii. The Select Star Parameters dialog box: make all the check boxes sticky.
 - iv. The Select Frame Parameters dialog box: make all the check boxes and edit boxes sticky. The edit boxes should display the last user's entry.
 - v. The Select SRSO Parameters dialog box: Use Manually Entered Coordinates should be the default.
 - vi. The Select RTCS Parameters dialog box: make checkboxes and the edit box sticky. The edit box should point to a valid directory.
 - vii. The IMC Set Parameters dialog box: when the delete key is pressed, the complete IMC set ID edit box should be deleted.
 - viii. The Select STOL Procedure Parameters dialog box: make checkboxes and the edit box sticky. The edit box should point to a valid directory. The default for Generate the Upload Files should be enabled.
- n. Does not issue either a warning or error flag during CP and schedule validations for Sounder frames with the BBCal parameter set to Do Not Suppress, as this is the normal mode of operation.

- o. Issues an error flag during CP and schedule validations if there is an error in a ##ground block.
- p. Does not delete ##ground directives when transferring Command Level Schedules into schedules.
- q. Issues only a warning during CP and schedule validations if the E/W frame boundary is less than 1600 increments from the space look address.
- r. Displays error messages received from OATS in a scheduler window.

Under the Performance Specification add, Paragraph 7.2.1, Item 49, Sub-item n, as follows:

- n. GTACS shall execute SCHEDX SHADOW ON and SCHEDX SHADOW OFF directives embedded in ground execution schedules.

Under the Performance Specification add S-415-22, Paragraph 7.2.1, Items 100 – 105, as follows:

- 100. Modify GTACS so that IMC-type globals change to the correct state value consistent with the type of IMC set in use when a *CLOAD Globals Update* directive is issued. GTACS shall store the type of each IMC set uploaded to the spacecraft. GTACS shall make the type of each IMC set uploaded to the spacecraft available for display and use in STOL procedures.
- 101. Modify GTACS to prevent an ACE CGI update when a data load command fails or is rejected by the spacecraft. GTACS shall not update the CGI when an ACE Direct Memory Access data load setup command fails or is rejected by the spacecraft.
- 102. Modify the GTACS Archive Manager functionality to store prime hourly archive files associated with a particular spacecraft in one folder rather than in separate subfolders created for each real-time stream. The Government must change the GAS long-term directory structure prior to the start of system level test for the scheduled Build 11 or Build 12 deliveries.
- 103. Modify GTACS to display an event message and activate an audible alarm when an MRS&S archive manager process terminates.
- 104. Modify GTACS to allow non-prime GTACS servers to redistribute checkpoint files to other non-prime GTACS servers, such that distribution to only one server is required to any remote site.
- 105. Modify the GTACS server checkpointing process to compress checkpoint files for distribution (and uncompress them on the receiving GTACS) and only distribute

checkpoint (in their entirety) files that have been modified since the previous checkpoint interval.

Under the Performance Specification add **Paragraph 7.2.3**, Items 20 – 23:

20. Modify the OATS to allow an operator to remove a planned yaw-flip maneuver if the maneuver is not performed.
21. Modify the OATS to permit an operator to decouple the OATS simulation time from the OATS system time so simulations can be performed without changing the system time. This requires a need to sync to BSE and OATS.
22. Modify the OATS to respond to all messages received from the Schedule Manager software and include the OATS error codes in the response messages in cases where OATS cannot complete the requested action.
23. Modify the OATS to allow the Remain process to function with a maneuver telemetry file that does not span the entire duration of the predicted maneuver.

Under the Performance Specification add Paragraph 7.2.4, Items 16 – 18:

16. Compute and make available MDL bit error rate (BER) measurements as an MRS&S data type, as follows:
 - a. Compute, distribute, and archive MDL BER data at a rate of one measurement per user definable unit of time with the default as 1 minute.
 - b. Allow the operator to clear and restart the BER measurement process without interrupting MRS&S processing of MDL data.
 - c. Allow MDL BER data to be retrieved from the MRS&S archive via the RPC client-server interface.
 - d. Allow MDL BER data to be retrieved from the MRS&S as a near real-time stream via the RPC client-server interface.
 - e. Allow MDL BER data to be retrieved from the MRS&S as part of the real-time telemetry monitor stream via the RPC client-server interface.
17. Modify the MRS&S to obtain time synchronization from a Network Time Protocol (NTP) server, as follows:
 - a. Replace the existing time code reader (TCR) functionality. No backward compatibility for TCR usage is required.
 - b. Duplicate and replace existing TCR status monitoring and reporting functions with equivalent NTP status monitoring and reporting functions.
18. Modify the MRS&S status message to GTACS to include the status of the MRS&S archive manager process.

Contract No. NAS 5-98069
Modification 144
Page 12 of 12

The contractor hereby releases the Government from any and all liability under this contract for further adjustments attributed to such facts or circumstances giving rise by their proposal No. HS601AB-3129 dated May 23, 2006 for CCR 4412 Spacecraft Support Ground System Engineering Change Proposal No.3, Modification 140 and Modification 143.

End of Modification

Attachment 1
To NAS5-98069

Clause B1, B2, and B5 change pages

SECTION B FOR NAS 5-98069
SUPPLIES AND SERVICES
MODIFICATION 144

B.1 DELIVERABLE REQUIREMENTS (GSFC 52.210-90) (OCT 1988)

The Contractor shall perform and/or deliver the following:

<u>Contract Line Item Number (CLIN)</u>	<u>Description</u>	<u>Price</u>
1.	On-Orbit Acceptance of GOES N Spacecraft	\$370,058,906
2.	Propulsion Computer Model & Supporting Documentation	NSP
3.	a. Software Development & Validation Environment b. GTACS Workstation for SXI T&C, I&V and Software Development	NSP
4.	Source & Executable Flight Software Code	NSP
5.	Emulators w/Spare Parts S/C Emulator (3) S/C Emulator without upgraded MDL ASIC (1) 3 sets EACE components (1 set includes EACE board, EACE DPM daughter card, EACE PAM board; 3 sets ETC components (1 set includes ETC board and PAM board; 2 special order ovenized oscillators used by EACE	NSP
6.	INR Performance Evaluation System	NSP
7.	SXI to Spacecraft Harness	NSP
8.	Battery Test Cells (5 from each activation lot)	NSP
9.	Data for Communication Modeling Engineering Model Data Flight Model Data	NSP
10.	Acceptance of SSGS	NSP
11.	On-Orbit Acceptance of GOES O Spacecraft	\$171,030,315

SECTION B FOR NAS 5-98069
SUPPLIES AND SERVICES
MODIFICATION 144

11a.	One set of GOES P Components as listed in Attachment M (formerly N/O Spares)	\$49,500,000
11b	Additional Ground Support Special Test Equipment (Mod 73)	NSP
12.	Special Task Assignments with Reports	\$ 6,755,494 See Clause B.9
13.	Additional Integration & Testing Support	\$534,000 See Clause H.4
14.	Spacecraft Storage	See Clause H.4
<u>OPTION 1</u>		
15.	On-Orbit Acceptance of GOES P Spacecraft	\$136,447,938
16	RESERVED	
17	Additional Integration & Testing Support	See Clause H.4
18	Spacecraft Storage	See Clause H.4

Total value of each CLIN, for purposes of final payment shall be reduced by Performance Based Payments made to the contractor for that CLIN.

(End of clause)

B.2 FIRM FIXED PRICE (18-52.216-78) (DEC 1988)

The total firm fixed price for this contract is \$744,472,501.00.

(End of clause)

B.3 RESERVED

SECTION B FOR NAS 5-98069
SUPPLIES AND SERVICES
MODIFICATION 144

N6C Final Acceptance PVM Final Delivery	\$ 121,072	L+7 mos
N7.Flight Operations Review	\$1,000,000	L-2 mos
N8.Spacecraft Launch Readiness Review	\$1,000,000	L-1 week

Software Subsystem Reviews

N9.Concept Review	\$3,000,000	Complete (Invoice 2)
N10. Requirements Review	\$2,500,000	Complete (Invoice 6)
N11. Preliminary Design Review	\$1,000,000	Complete (Invoice 8)
N12. Critical Design Review	\$2,500,000	Complete (Invoice 23A)
N13. Test Readiness Review	\$2,000,000	Complete (Invoice 37)
N14. Acceptance Review	\$10,000,000	Complete (Invoice 38)

Spacecraft Support Ground System Reviews

N15. System Concept Review	\$2,500,000	Complete (Invoice 4)
N16. Preliminary Design Review	\$1,000,000	Complete (Invoice 7)
N17. Critical Design Review	\$3,000,000	Complete (Invoice 16)
N18. Pre-Shipment Review	\$9,000,000	Complete (Invoice 37)
N19A Award of ISI subcontract change for ECP3	\$1,350,983	11/1/06
N19B SSGS Build 11: Installation and Regression Tests on the NOAA DEV LAN complete	\$1,350,983	12/1/06
N19C SSGS Build 12: Installation and Regression Tests on the NOAA DEV LAN complete	\$1,350,983	Launch + 14 Months
N19D Acceptance Review	\$5,459,125	Launch + 17 Months

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE 1 OF 2 PAGES
2. AMENDMENT/MODIFICATION NO. 145		3. EFFECTIVE DATE See Blk 16		4. REQUISITION/PURCHASE REQ. NO. N/A	
5. PROJECT NO. (If applicable)					
6. ISSUED BY NASA/Goddard Space Flight Center Bldg 6, Room W246 Greenbelt, Maryland 20771		CODE 210.Y		7. ADMINISTERED BY (If other than Item 6) NASA Goddard Space Flight Center Code 210.7 Greenbelt, MD 20771	
8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP: Code)		(4)		9A. AMENDMENT OF SOLICITATION NO.	
Boeing Satellite Systems Inc, P.O. Box 92919 Los Angeles, California Attn: Mr. Scott Ingersoll, NASA Contracts Manager				9B. DATED (SEE ITEM 11)	
		X		10A. MODIFICATION OF CONTRACT/ORDER NO. NAS5-98069	
				10B. DATED (SEE ITEM 13) Jan 28, 1998	
CODE		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

Amt: \$0.00

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

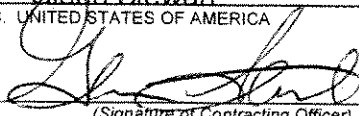
(4)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER Specify type of modification and authority) Clause H.4--Additional Government Accommodations
E. IMPORTANT: Contractor XXX is not, is required to sign this document and return ___ copies to the issuing office.	

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to revise the Engineering Handover Date identified in clause F. 2 for the GOES O and P Spacecraft.

Accordingly:

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		Glenn Stewart	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY  (Signature of Contracting Officer)	9/28/06

Contract No. NAS 5-98069

Modification 145

Page 2 of 2

1. In accordance with Clause H.4—Additional Government Accommodations, paragraph (g) of contract NAS 5-98069, the Contractor (BSS) is hereby notified of a revision to the Engineering Handover Date (EHD) for the GOES O Spacecraft. This notification serves to fulfill the Government's contractual obligation to amend the contract via modification and to notify the contractor (BSS) of a revised EHD 15 months in advance of the current Engineering Handover Date.

As stated in Clause F.2 of contract NAS 5-98069, the Engineering Handover for GOES O is hereby changed from December 30, 2007 to January 31, 2008 and the Engineering Handover for GOES P is changed from April 30, 2008 to October 31, 2008.

2. Replace page F-3 with the enclosed revised F-3 change page.

The fixed Price of this contract and the funds allotted for the performance thereof shall not be deemed to be increased by the modification. This modification also represents a complete and equitable settlement for the work associated with this change and releases the Government from any and all liability under this contract for further equitable adjustment attributed to such facts and circumstances giving rise by this modification, except as provided for in Clause H.4(g).

End of Modification

SECTION F FOR NAS 5-98069
DELIVERIES OR PERFORMANCE
MODIFICATION 145

F.2 ENGINEERING HANDOVER DATES AND STORAGE DATES

The following dates are defined as the engineering handover dates and the earliest dates at which the spacecraft may be placed into ground storage:

	<u>Earliest Ground Storage Date</u>	<u>Engineering Handover Date</u>
GOES N	January 1, 2002	December 31, 2004
GOES O	January 1, 2003	January 31, 2008
GOES P	January 1, 2005	October 31, 2008

The contractor shall place each GOES spacecraft or replacement spacecraft into storage, if required, at the contractor's facility immediately following successful completion of spacecraft Integration and Test (I&T) (including integration and test of the delivered GFE instruments) and successful completion of the pre-storage review, but no earlier than the dates specified for Earliest Storage Date (ESD). No storage charges, as defined in Clause H.4, shall be paid prior to the ESD or for any storage resulting from delays in the Contractor-provided launch.

(End of clause)

F.3 SECTION F CLAUSES INCORPORATED BY REFERENCE

- (52.242-15) STOP-WORK ORDER (AUG 1989)
- (52.247-34) F.O.B. DESTINATION (NOV 1991)

(End of By Reference Section)